
Space Weather Forecast

Issued on Wednesday, 17 January 2024 at 01:02 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Chance of isolated Moderate-class X-ray flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity is at Low levels, with only common class activity recorded. There are currently thirteen sunspots on the visible disc, five of which are unnumbered. The complex in the southwest is becoming increasingly difficult to assess as it approaches the limb, the main portion remains an elongated yet sparsely populated spot. The large spot in the southeast remains dominated by a large leader spot followed by small trailing regions. The large spot in the southwest closer to the equator has shown slight growth recently, now with tenuous signs of a delta region perhaps beginning to form in the large penumbral area. All other regions appear small and/or simple.

No coronal mass ejections (CMEs) observable on coronagraph imagery over the past 24 hours are expected to have an Earth-directed component.

Solar Wind / Geomagnetic Activity: Solar wind parameters have been near background levels, with solar wind speeds at slow/ambient. The interplanetary magnetic field has been generally weak throughout. The north-south component was weak. Geomagnetic activity was mostly Quiet (Kp 0-2), with a brief interlude of Unsettled (Kp3) 16/0000-0300.

Energetic Particles / Solar Radiation: Solar radiation was at background levels, with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: There is a chance of isolated Moderate-class activity.

Solar Wind / Geomagnetic Activity: No Earth-directed coronal mass ejections currently feature in the forecast.

A coronal hole high speed stream may bring slightly elevated solar wind speeds at Earth day 1 (17 Jan), with effects waning day 2 (18 Jan), before a further coronal hole high speed stream possibly arrives day 4 (20 Jan), with slightly elevated solar wind speeds once again.

Overall, geomagnetic activity is likely to be largely Quiet (Kp 0-2). There is a chance of Unsettled to Active (Kp 3-4) intervals mainly on day 1 (17 Jan), and again on day 4 (20 Jan) upon the connection to the anticipated coronal hole high speed streams.

Energetic Particles / Solar Radiation: Solar radiation is expected to persist at background levels. Although, there remains an ongoing slight chance of seeing an increase to the S1/Minor Radiation Storm threshold should any notable flares occur.

Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	10	1	1	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	No	30	30	30	30
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)